

**Chapter 11.0**

**Closure and Financial Assurance**

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## **11.0 CLOSURE AND FINANCIAL ASSURANCE**

This chapter is submitted in accordance with the requirements of WAC 173-303-806(4)(a)(xiii) to demonstrate that DOE-RL has developed a plan to ensure safe closure of the 331-C Storage Unit. In accordance with WAC 173-303-610, copies of the closure plan and all revisions will be maintained at 331-C Storage Unit until certification of closure completeness has been submitted and accepted by Ecology. A post-closure plan is not required because 331-C Storage Unit is not a land-based unit and all dangerous waste and dangerous waste residues will be removed at the time of closure.

### **11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE**

This plan presents the activities required for final closure of the 331-C Storage Unit at its maximum extent of operation. This closure plan is expected to be updated at closure to reflect integration with the River Corridor cleanup project. Partial closure will not be conducted. Closure activities are presented in sufficient detail such that the closure process is understandable and a closure schedule can be developed.

#### **11.1.1 Closure Performance Standard**

The following sections identify performance standards for clean closure of the 331-C Storage Unit.

##### **11.1.1.1 Performance Standards for Soil/Environmental Media**

Closure of the 331-C Storage Unit will be conducted in a manner that meets the clean closure performance standards of WAC 173-303-610(2)(a). The performance standards will be met by removing all dangerous waste inventory and by removing or decontaminating all structures and soil to clean closure removal or decontamination standards.

Due to the scope of operations of the 331-C Storage Unit and the preventive measures utilized during operations, releases from the unit that result in soil contamination are not expected. Should such releases result in soil contamination during the operating life of the 331-C Storage Unit, remediation of the contaminants of concern to the numeric cleanup levels prescribed by WAC 173-303-610(2)(b)(i) will be addressed in conjunction with operable unit remediation requirements under the 300-FF-2 Record of Decision and associated CERCLA documentation.

##### **11.1.1.2 Structure Removal or Decontamination Standards**

The clean closure removal and decontamination standards for structures, equipment, bases, liners, etc. have been established in accordance with WAC 173-303-610(2)(b)(ii).

The clean closure standard for structures is a visually verifiable standard established in accordance with WAC 173-303-610(2)(b)(ii). The standard is the absence of obvious stains or residues that would indicate potential dangerous waste contamination. Surfaces must be free of indications of potential dangerous waste, except for residual waste stains consisting of light shadows, slight streaks, or minor discoloration. The standard will be achieved through decontamination of all indoor and outdoor storage and loading area floor and pad surfaces. The standard will be verified by visual inspections performed and documented as described in Section 11.1.2.3.2. Only storage and loading area floor surfaces and some miscellaneous components that will remain after closure are expected to have the potential to have been contaminated by storage operations and these areas will be required to meet this standard.

##### **11.1.2 Closure Activities**

This plan identifies the steps necessary to perform final closure of the unit in order to meet the closure performance standards. Closure activities to achieve and verify clean closure of structures and soil (i.e., storage and loading area pads, floors, trenches, and sumps) are as follows.

- Remove all dangerous waste inventory
- Remove potentially contaminated storage building equipment and components for reuse

- Decontaminate storage building components and storage building and loading area floors, trenches, and sumps
- Visually inspect the decontaminated surfaces for achievement of the clean closure standard
- Sample any contaminated soil and compare results to clean closure standards for soil (not currently expected to be necessary)
- Certify that closure activities were completed in accordance with the approved closure plan.

#### **11.1.2.1 Maximum Extent of Operations**

The 331-C Storage Unit is used to store a variety of different research-related waste and is expected to be fully operational until closure (i.e. no partial closures of storage areas are expected). The maximum inventory of waste in storage at any time will be constrained by three factors:

- The total amount of dangerous waste in storage at 331-C Storage Unit at any time will not exceed the design capacity of 20,000 gallons (it is typically 2,000 to 5,000 gallons during normal operations)
- The total amount of any particular dangerous waste in storage during any given year will not exceed the amounts given in the Part A Form for 331-C Storage Unit (Chapter 1.0)
- The total amount of dangerous waste by hazard class in storage at any one time will not exceed Uniform Building Code Class B Hazardous Material Quantity Restrictions (Table 4.1).

Evidence of spills or leaks will be obtained through (a) review of spill reports and operating log books; (b) visual inspection of unit structures accessible to the environment (e.g., floors) and through inspection of all visible barriers designed to prevent migration to the environment, and (c) sampling, as necessary to characterize waste/debris that is found while performing visual inspection. If this inspection program indicates that contamination is present, the potential for migration of contamination to the environment will be evaluated. If potential migration appears likely, samples will be taken. In addition, if the inspections identify any potential contaminant migration routes (e.g., cracks in sumps), samples will be collected to determine whether migration has occurred. Waste site specific information discovered during facility closure will be updated in WIDS.

#### **11.1.2.2 Removing Dangerous Wastes**

Closure activities will be initiated by removal of the dangerous waste inventory present at 331-C Storage Unit at the time of closure. Inventory removal procedures will be identical to the waste handling, packaging, and manifesting activities associated with normal operation of the unit. All dangerous waste present will be placed into proper containers according to waste handling procedures described in Chapter 4 of this document. To the extent possible, chemicals will be labpacked or bulked into larger containers. If wastes are bulked, containers will be emptied in compliance with WAC 173-303-160 so that they are not dangerous waste. Labpack containers will be packaged in compliance with the requirements of WAC 173-303-161. All containers of dangerous waste will be manifested, and custody transferred to a dangerous waste transporter having a proper dangerous waste identification number. Waste will be transported to a permitted dangerous waste facility for treatment or disposal.

#### **11.1.2.3 Decontaminating Structures, Equipment and Soil**

The following sections describe decontamination and inspection activities for structures and miscellaneous building components that will remain after closure.

##### **11.1.2.3.1 Waste Handling Equipment**

No equipment will remain after closure that would require decontamination to meet clean closure levels. All portable waste handling equipment used for handling containers (e.g., barrel tongs, forklift truck, shelving, cabinets) will be decontaminated in the same manner as described in Section 11.1.2.3.3 below, removed and redeployed to other Hanford or PNNL operations.

#### 11.1.2.3.2 Examination of Structure Surfaces

After waste inventory removal, but prior to beginning decontamination procedures, the unit surfaces will be inspected to identify any cracks or other openings through which dangerous waste or decontamination fluids might migrate. The inspections will determine which of the materials that will remain after closure already meet the clean closure standard of a "clean debris surface" and which materials require decontamination to meet the standard. A *"clean debris surface means the surface, that when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste, except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration, and soils and waste in cracks, crevices and pits shall be limited to no more than 5% of each square inch of surface area."* (40 CFR 268.45)

Any cracks or openings in unit surfaces will be documented in the 331-C operating record and investigated to determine if releases of dangerous waste or dangerous waste constituents have occurred. If the potential exists for releases to have occurred, sampling will be required, in which case this closure plan will be amended to provide for the sampling and analysis process (Section 11.1.2.4). If no potential for releases is found, the cracks or openings will be repaired to prevent release of decontamination fluids and decontamination will proceed as described below.

#### 11.1.2.3.3 Decontamination of Structures

Storage cell floors, sumps, trenches, and outdoor loading areas requiring decontamination will be cleaned using one or more of the removal technologies described in 40 CFR 268.45, as necessary to meet the "clean debris surface" criteria. Cleaning will be conducted so as to minimize the quantity of rinsates generated. Rinsates (if any) will be collected in trenches or sumps, pumped from the sumps into appropriate containers, and the pump triple rinsed. Rinsate collection locations will be cleaned and inspected last. Decontamination will be documented on a decontamination and inspection checklist (see next paragraph). All decontamination waste will be designated in accordance with WAC 173-303 and , if hazardous, managed in compliance with WAC 173-303-610(5). Decontamination waste requiring management as dangerous waste will be managed in a 90-day accumulation area established for the purpose and/or transported to a permitted TSD unit for storage pending disposal.

Inspection of materials for a "clean debris surface" will be documented on a checklist that will identify the area inspected, whether decontamination/treatment methods were implemented and the standard used to perform the inspection. If contamination above the clean surface debris criteria is found, the affected areas will be cleaned. Any contaminated material generated by this activity will be managed as described above.

Following completion of decontamination, another visual inspection will be performed to verify that decontamination is complete. The cleaned surfaces will be visually inspected for achievement of the clean closure standard described in Section 11.1.1.2 of no obvious stains or residues indicating potential dangerous waste contamination. The visual inspection will be documented on the checklist used to document the decontamination. When the visual standard is met, the structure will be considered clean. Copies of the completed visual inspection checklist(s) will be placed in the 331-C Storage Unit Operating Record.

#### 11.1.2.3.4 Decontamination and Inspection of Miscellaneous Building Components

Grating over trenches of the indoor areas and the outdoor loading pads will be cleaned by high-pressure/low-volume steam or water spray, or will be cleaned by hand using rags, brushes, water, and an appropriate cleaner, if necessary. Rinsate and decontamination materials will be collected, designated, and managed accordingly. Decontamination will be documented on a decontamination and inspection checklist. The grating will be inspected for achievement of the clean closure standard and the inspection documented on the checklist used to document the decontamination.

**11.1.2.4 Sampling and Analysis to Identify Extent of Decontamination/Removal and to Verify Achievement of Closure Standard**

No sampling and analysis of environmental samples (soil or other materials) is expected to be required due to the preventive measures in place during the operating life of the 331-C Storage Unit. If environmental media are contaminated during operation of the 331-C Storage Unit, this plan will be revised to identify methods for sampling and analysis of such media. Decontamination of hazardous debris will be conducted in accordance with the procedures given in Section 11.1.2.3. The results of this examination will be documented on a decontamination and inspection checklist. Any necessary sampling and analysis will be conducted in accordance with a sampling and analysis plan to be developed according to Ecology's Clean Closure Guidance (Publication 94-111, current version).

**11.1.2.5 Other Activities**

Within 60 days of completion of the final closure activities described in this plan, a certification of closure will be submitted to Ecology. This certification will indicate that the 331-C Storage Unit has been closed as described in this plan and that the closure performance standard given in Section 11.1 has been met. The certification will be submitted by registered mail and will be signed by the Permittees and an independent Professional Engineer registered in the State of Washington as described below.

The Permittees will certify with the following document or a document similar to it:

*I, (name), an authorized representative of the U.S. Department of Energy-Richland Operations Office located at the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby state and certify that the 331-C Storage Unit at the 300 Area, to the best of my knowledge and belief, has been closed in accordance with the attached approved closure plan, and that the closure was completed on (date).*

(Signature and date)

The Permittees will engage an independent Professional Engineer registered in the State of Washington to inspect closure activities, to verify that closure activities are being conducted according to this plan, and to certify that closure has been performed in accordance with this plan.

The engineer will inspect the 331-C Storage Unit at least weekly while closure activities are being performed. During these inspections the engineer will observe closure activities to determine whether they are being performed according to this plan. Inspections will include, but not be limited to:

- Inspection of dangerous waste containment structures and systems to determine whether releases of waste to the environment have occurred
- Verification that the dangerous waste inventory has been removed within 90 days of receipt of the last waste shipment
- Inspection of manifests and Operating Record to verify that these waste were disposed of in compliance with WAC 173-303
- Inspection of decontamination operations to verify that they are being performed using the procedures described in this plan
- Inspections of the Operating Record to verify that samples of liquid decontamination waste were collected and analyzed using the procedures described in this plan
- Inspection of the Operating Record to verify that decontamination waste were properly managed in accordance with the requirements of WAC 173-303-610(5).

Inspections by the engineer will be documented in a bound notebook. Notations will include the date and time of the inspection, the areas inspected, the activities inspected, applicable closure plan requirements inspected, status of observed activities with respect to plan requirements, corrective actions required

status of past corrective actions, and name and signature of inspector. This inspection notebook will be made available to Ecology upon request.

Upon completion of closure according to the plan, the Permittees will require the engineer to sign the following document or a document similar to it:

*I, (name), a registered Professional Engineer, hereby certify, to the best of my knowledge and belief, that I have made visual inspection(s) of the 331-C Storage Unit at the 300 Area and that closure of the aforementioned unit has been performed in accordance with the attached approved closure plan.*

(Signature, date, state Professional Engineer license number, business address, and phone number.)

No other activities are expected to be necessary for clean closure.

### **11.1.3 Maximum Waste Inventory**

The maximum waste inventory for the 331-C Storage Unit will not exceed 20,000 gallons, as described in Chapter 1.0. The inventory will consist of the waste types described in Chapter 1.0.

### **11.1.4 Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment Facilities, and Miscellaneous Units**

This section is not applicable to the 331-C Storage Unit because wastes are not managed in these types of units.

### **11.1.5 Closure of Landfill Units**

This section is not applicable to the 331-C Storage Unit because it does not contain any landfill units and will not be closed as a dangerous waste landfill unit.

### **11.1.6 Schedule for Closure**

When closure begins, the inventory of dangerous waste will be removed within 90 days from receipt of the final volume of waste. All closure activities will be completed within 180 days of receipt of the final volume of waste. Ecology will be notified by DOE-RL at least 45 days before the final closure activities are begun. Closure activities are summarized in Table 11.1. A detailed schedule of closure activities is provided in Table 11.2.

### **11.1.7 Extension for Closure Time**

The inventory of dangerous waste will be removed from the 331-C Storage Unit within 90 days of receipt of the last volume of waste. The closure activities described in this plan will be completed within 180 days of receipt of the final volume of waste. No extension to the time frame for initiation and completion of closure is currently expected to be necessary. Extensions to the time frames for closure would only be necessary if unexpected conditions were encountered during closure of the unit. If it becomes apparent that all waste cannot be removed within 90 days, Ecology will be so notified at least 30 days prior to expiration of the 90-day period. This notification will demonstrate why more than 90 days is required for removal of the waste and will demonstrate that steps have been taken to prevent threats to human health and the environment and that the unit is in compliance with applicable permit standards. If it becomes apparent that closure cannot be completed within 180 days after approval of this plan, Ecology will be so notified at least 30 days prior to expiration of the 180-day period. This notification will demonstrate why more than 180 days is required for closure and will demonstrate that steps have been taken to prevent threats to human health and the environment and that the unit is in compliance with applicable permit standards.

### **11.1.8 Closure Cost Estimate**

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620 based upon Permit Condition II.H.

**11.1.9 Financial Assurance Mechanism for Closure**

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620 based upon Permit Condition II.H.

**11.2 NOTICE IN DEED**

This section is not applicable because the 331-C Storage Unit is not expected to be closed as a dangerous waste disposal unit.

**11.3 POSTCLOSURE PLAN**

This section and subsequent subsections are not applicable because the 331-C Storage Unit is expected to be clean closed, not as a land-based unit.

**11.4 LIABILITY REQUIREMENTS**

The Hanford Facility is not required to comply with the financial assurance requirements in WAC 173-303-620 based upon Permit Condition II.H.3.

**Table 11.1. Summary of Closure Activities**

Closure Activity Description	Expected Duration
Receipt of final volume of dangerous waste	N/A
Notify EPA and Ecology that closure will begin	30 days
Remove waste inventory – package all dangerous waste, manifest, and transfer to permitted facility for further storage, treatment and/or disposal	45 days
Decontaminate structural surfaces and equipment.	55 days
Analyze decontamination waste to determine proper methods of treatment/disposal	25 days
Dispose of decontamination waste based on results of waste analysis	20 days

**Table 11.2. Detailed Schedule of Closure**

Action	Schedule
<b>Pre-Closure Activities</b>	
Date of receipt of last volume of waste	Day 0
Notify EPA and Ecology	Day 30
<b>Closure Activities</b>	
Removal of Waste Inventory	Day 75
Removal of equipment and components	Day 95
Decontamination of Unit	Day 130
<b>Management of Decontamination Waste</b>	
Waste Analysis	Day 155
Waste Disposal	Day 175
<b>Other Activities</b>	
Certification of Closure to Ecology	Day 215